

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A data storage device comprising:

a probe tip mounted on a suspension mechanism;

a data storage layer;

at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism; and

a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

2. (Original) The data storage device of claim 1 wherein the data storage layer is in contact with the probe tip.

3. (Original) The data storage device of claim 2 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or a protrusion.

4. (Original) The data storage device of claim 1 wherein the data storage layer comprises a polymer material.

5. (Previously Amended) The data storage device of claim 1 wherein the at least one conducting layer comprises a conducting thin film.
6. (Original) The data storage device of claim 5 wherein the conducting thin film comprises at least one of a deposited metal film of Mo, Cu, TA.
7. (Original) The data storage device of claim 1 wherein the conducting layer comprises a conducting substrate.
8. (Original) The data storage device of claim 7 wherein the conducting substrate comprises a doped silicon material.
9. (Original) The data storage device of claim 1 wherein the suspension mechanism includes a flexible cantilever.
10. (Original) The data storage device of claim 9 wherein the capacitance is formed on at least one side of the flexible cantilever.
11. Please cancel claim 11.
12. (Original) The data storage device of claim 11 wherein the change in capacitance comprises a difference in capacitance between the first capacitance and the second capacitance.

13. (Currently Amended) A method of reading data from a data storage device comprising:

suspending a probe tip over a data storage layer via a suspension mechanism;

providing at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer
wherein a first capacitance is formed on a first side of the suspension mechanism and a second capacitance is formed on a second side of the suspension mechanism; and

reading data from the storage device by sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

14. (Original) The method of claim 13 wherein the data storage layer comprises a polymer material.

15. (Original) The method of claim 13 wherein the at least one conducting layer comprises a conducting thin film.

16. (Currently Amended) The method of claim 15 wherein the conducting thin film comprises at least one of a deposited metal film of Mo, Cu, TA, and an alloy.

17. (Original) The method of claim 13 wherein the at least one conducting layer comprises a conducting substrate.

18. (Original) The method of claim 17 wherein the conducting substrate comprises a doped silicon material.

19. (Original) The method of claim 13 wherein the suspension mechanism further includes a flexible cantilever and the act of providing at least one conducting layer further comprises providing a conducting layer within the suspension mechanism whereby a capacitance is formed between the conducting layer and the flexible cantilever.

20. Please cancel claim 20.

21. (Original) The method of claim 20 wherein the act of sensing a change in capacitance comprises sensing a difference in capacitance between the first and second capacitance.

22. (Original) The method of claim 13 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or protrusion.

23. (Original) A computer system comprising:
a central processing unit; and

a data storage device coupled to the central processing unit comprising:

a probe tip mounted on a suspension mechanism;

a data storage layer;

at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer; and

a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

24. (Previously Amended) A data storage device comprising:

a probe tip mounted on a flexible suspension mechanism;

at least one capacitor coupled to the flexible suspension mechanism; and

a sensor for sensing a change in capacitance of the at least one capacitor based on a displacement of the probe tip due to the presence of a bit.